

REMARKS

Claims 1, 3-5, and 8-23 are in the application, of which claims 1 and 21 are in independent form. Claims 2, 6, and 7 are canceled by this amendment.

Rejections Over Commonly Assigned References (35 U.S.C. § 103(c))

The Examiner's rejections, to which applicants respond in detail below, include rejections under 35 U.S.C. 103(a) for obviousness in view of U.S. Pat. No. 6,224,216 ("Parker et al.") and for obviousness in view of U.S. Pat. No. 6,419,365 ("Potekev et al.").

Because this application was filed after November 29, 1999, applicant's agent chooses to overcome these rejections by stating:

This application, No. 10/027,784, filed December 19, 2001; U.S. Pat. No. 6,224,216, filed February 18, 2000 of Parker et al.; and U.S. Pat. No. 6,419,365, filed April 21, 2000 of Potekev et al. were all wholly owned by InFocus Corporation, at the time the invention of this application was made. (MPEP 706.02(1)(2).)

Claims 1, 2, 6, 13, 18, and 21 stand rejected under 35 U.S.C. 102(a) for anticipation by Marshall.

Regarding claim 1, the Examiner states that Marshall Figs. 4 and 7 show image projection systems including a projection lens, a dichroic prism having one side facing the projection lens, three reflective imaging devices each facing a side of the dichroic prism, and a light source generating blue, green, and red light and positioned such that the three imaging devices respectively receive the blue, green and red light and reflect the blue, green and red light through the dichroic prism toward the projection lens.

Applicants respond by amending independent claims 1 and 21 to recite a coherent light source and micromirror display devices. Claims 2, 6, and 7 are canceled, and claims 3-5, 8-13, 18, 19, 22 and 23 are amended to harmonize with amended claims 1 and 21.

Applicants refer to the Examiner's obviousness rejection (below) of claims 4 and 5 in which he states that Marshall does not show light sources including light-emitting diodes ("LEDs") or lasers, but that Parker et al. disclose an image projection system employing LEDs or diode lasers. A coherent light source limitation has been imported into amended claim 1.

Applicants also refer to the Examiner's obviousness rejection (below) of claims 8 and 13 in which he states that Marshall does not teach micromirror displays, but that Potekev et al. teach a digital micromirror display. This limitation has been imported into amended claim 1.

Because Parker et al., Potekev et al., and this application were all commonly assigned/owned when the invention of amended claim 1 was made, applicants respectfully request that this rejection be withdrawn (see the common ownership statement set forth above).

Claims 2 and 6 are canceled, rendering their rejection moot.

Applicants believe that amended claims 13, 18, and 21 are allowable for the reasons set forth above supporting amended claim 1 and request, therefore, that this rejection be withdrawn.

Claims 3, 7, and 23 stand rejected under 35 U.S.C. 103(a) for obviousness over Marshall as applied to claims 2 and 6 above and further in view of U.S. Pat. No. 5,159,485 ("Nelson").

Applicants respond by amending claims 3 and 23 to harmonize with respective amended independent claims 1 and 21. Claim 7 is canceled, rendering its rejection moot.

Applicants believe that amended claims 3 and 23 are allowable for the reasons set forth above supporting amended claim 1 and request, therefore, that this rejection be withdrawn.

Claims 4 and 5 stand rejected under 35 U.S.C. 103(a) for obviousness over Marshall as applied to claim 2 above, and further in view of Parker et al.

Regarding claims 4 and 5, the Examiner states that Marshall does not show light sources including light-emitting diodes or lasers, but that Parker et al. disclose an image projection system that employs LEDs or diode lasers for emitting the desired wavelengths.

Applicants respond by amending claims 4 and 5 to harmonize with amended claim 1.

Moreover, applicants respectfully request that this rejection be withdrawn because Parker et al. and this application were commonly assigned/owned when the invention was made (see the common ownership statement set forth above).

Claims 8, 13, and 14 stand rejected under 35 U.S.C. 103(a) for obviousness over Marshall as applied to claim 1 above, and further in view of Potekev et al.

Regarding claim 8, the Examiner states that Marshall does not teach a micromirror display, but that Potekev et al. do. Moreover, Potekev et al. disclose array of digitally deflected micromirrors that are each quadrilateral and pivotable about a diagonal axis.

Regarding claims 13 and 14, the Examiner states that Potekev et al. show a reflective imaging device including pixels that selectively reflect the blue, green and red light towards a projection lens or a light-absorbing surface.

Applicants respond by amending claims 8 and 13 to harmonize with amended claim 1.

Moreover, applicants respectfully request that this rejection be withdrawn because Potekev et al. and this application were commonly assigned/owned when the invention was made (see the common ownership statement set forth above).

Claim 9 stands rejected under 35 U.S.C. 103(a) for obviousness over Marshall as applied to claim 1 above, and further in view of Potekev et al. and Sawamura.

Regarding claim 9, the Examiner states that Marshall does not teach a micromirror display, but that Potekev et al. do. Moreover, Sawamura discloses a micromirror display comprising an array of digitally deflected mirrors that are each quadrilateral and pivotable about a longitudinally centered axis.

Applicants respond by amending claim 9 to harmonize with amended claim 1.

Moreover, applicants respectfully request that this rejection be withdrawn because Potekev et al. and this application were commonly assigned/owned when the invention was made (see the common ownership statement set forth above).

Claims 10 and 22 stand rejected under 35 U.S.C. 103(a) for obviousness over Marshall as applied to claim 1 above, and further in view of U.S. Pat. No. 6,076,931 ("Bone et al.").

Applicants respond by amending claims 10 and 22 to harmonize with respective amended independent claims 1 and 21.

Applicants believe that amended claims 10 and 22 are allowable for the reasons set forth above supporting amended claim 1 and request, therefore, that this rejection be withdrawn.

Claims 11 and 12 stand rejected under 35 U.S.C. 103(a) for obviousness over Marshall as applied to claim 1 above.

Applicants respond by amending claims 11 and 12 to harmonize with amended independent claim 1.

Applicants believe that amended claims 11 and 12 are allowable for the reasons set forth above supporting amended claim 1 and request, therefore, that this rejection be withdrawn.

Claims 15-17, and 19 stand rejected under 35 U.S.C. 103(a) for obviousness over Marshall as applied to claim 1 above, and further in view of U.S. Pat. No. 5,658,060 ("Dove").

Applicants respond by amending claim 19 to harmonize with amended independent claim 1.

Applicants believe that claims 15-17, and amended claim 19 are allowable for the reasons set forth above supporting amended claim 1 and request, therefore, that this rejection be withdrawn.

Claim 20 stands rejected under 35 U.S.C. 103(a) for obviousness over Marshall as applied to claim 1 above, and further in view of U.S. Pat. No. 5,760,875 ("Daijogo et al.").

Applicants believe that claim 20 is allowable for the reasons set forth above supporting amended claim 1 and request, therefore, that this rejection be withdrawn.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Amend claim 1 as follows:

1. (Amended) An image projection system, comprising:
a projection lens;
a dichroic cross-combiner assembly having sides with one side facing the projection lens;
three [reflective imaging devices, each reflective imaging device] micromirror display
devices, each including an array of digitally deflected mirrors positioned facing a side of the
dichroic cross-combiner assembly; and
a coherent light source apparatus generating narrow bands of blue, green, and red light
and positioned such that the three reflective imaging devices respectively receive the blue, green,
and red light and reflect the blue, green, and red light through the dichroic cross-combiner
assembly toward the projection lens.

Cancel claim 2

- [2. The image projection system of claim 1 in which the light source apparatus comprises
three colored light sources that respectively provide the narrow bands of blue, green, and red
light.]

Amend claims 3-5 as follows:

3. (Amended) The image projection system of claim [2] 1, further comprising three pairs
of lenses, each pair including an anamorphic beam expanding lens and an anamorphic collimating
lens, each pair being positioned between one of the three [colored] coherent light sources and one
of the three [reflective imaging] micromirror display devices.

4. (Amended) The image projection system of claim [2] 1 in which the [three colored
light sources include] coherent light source includes light-emitting diodes.

5. (Amended) The image projection system of claim [2] 1 in which the [three colored
light sources include] coherent light source includes lasers.

Cancel claims 6 and 7.

- [6. The image projection system of claim 1 in which the light source apparatus comprises
a multicolor light source that generates the narrow bands of blue, green, and red light.]

- [7. The image projection system of claim 6, further comprising a pair of lenses, the pair
including an anamorphic beam expanding lens and an anamorphic collimating lens, the pair being
positioned such that the light passes through the pair before being received by the three reflective
imaging devices.]

Amend claims 8-13, 18, 19, and 21-23 as follows:

8. (Amended) The image projection system of claim 1 in which [each reflective imaging
device is a micromirror display comprising an array of] the digitally deflected mirrors [that] are
each quadrilateral and pivotable about a diagonal axis.

9. (Amended) The image projection system of claim 1 in which [each reflective imaging device is a micromirror display comprising an array of] the digitally deflected mirrors [that] are each quadrilateral and pivotable about a longitudinally centered axis.

10. (Amended) The image projection system of claim 1 in which the coherent light source apparatus is positioned such that the three [reflective imaging] micromirror display devices respectively receive blue, green, and red light at an oblique angle of incidence.

11. (Amended) The image projection system of claim 1 in which each [reflective imaging] micromirror display device and the projection lens are positioned in a first plane and the coherent light source apparatus delivers light from a second plane.

12. (Amended) The image projection system of claim 1 in which the coherent light source apparatus is positioned below the dichroic cross-combiner assembly.

13. (Amended) The image projection system of claim 1 in which each [reflective imaging] micromirror display device includes reflective pixels that are adapted to selectively reflect the respective blue, green, and red light towards one of the projection lens or a light-absorbing surface in proximity to the projection lens.

18. (Amended) The image projection system of claim 1 in which the dichroic cross-combiner assembly is adapted to simultaneously receive the blue, green, and red light from the respective [reflective imaging] micromirror display devices and to combine the blue, green, and red light to form a composite image directed toward the projection lens.

19. (Amended) The image projection system of claim 1, further comprising three field lenses, in which each field lens is positioned between one of the three [reflective imaging] micromirror display devices and one of the sides of the dichroic cross-combiner assembly.

21. (Amended) A method for projecting color display information, comprising:
directing blue, green, and red coherent light respectively toward three [reflective imaging] micromirror display devices;

reflecting the blue, green, and red coherent light from the three [reflective imaging] micromirror display devices into a dichroic cross-combiner assembly;

simultaneously combining the blue, green, and red coherent light from the respective [reflective imaging] micromirror display devices in the dichroic cross-combiner assembly to form a composite image; and

directing the composite image toward a projection lens.

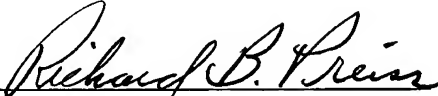
22. (Amended) The method of claim 21 further including obliquely directing the blue, green, and red coherent light toward the three [reflective imaging] micromirror display devices.

23. (Amended) The method of claim 22 further comprising expanding and collimating the blue, green, and red coherent light before the blue, green, and red coherent light reaches the three [reflective imaging] micromirror display devices.

Applicants believe their application is in condition for allowance and respectfully request the same.

Respectfully submitted,

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